A microphone/ear-headphone unit and a computer system

BACKGROUND OF THE INVENTION AND PRIOR ART

The invention concerns a microphone/ear-headphone unit configured as one unit with a microphone part and an ear-headphone part which are arranged on the unit such that when the unit is used as intended, the ear-headphone part is arranged at or held against the ear of a user while the microphone part is arranged near the user's mouth. The unit is arranged to be able to be connected to a computer in order to with the help of the unit enable conversational communication via the computer. The computer is of the kind which at least also can be connected to a loudspeaker, which can be a desk or floor loudspeaker, or which has a built-in loudspeaker.

Such a unit is already known. The unit may for example constitute a telephone handset or a headset that is to be attached to a user's head. With the unit, communication can take place with the computer. The communication can take place only with the computer, for example in that commands are fed into the computer via the microphone part and in that sounds produced with the help of computer programs are heard with the ear-headphone part. However, it is more and more common that the computer is used as an alternative to an ordinary telephone. It is thus possible to via the computer carry on a conversation with a person who is located at another computer. This communication takes most often place via the Internet. It should also be noted that a computer, for example a personal computer, normally has connected loudspeakers, which usually are separate and positioned on a desk or on the floor. The loudspeakers are usually connected via the loudspeaker input terminal of the computer. A computer often also has a particular microphone which is connected with the help of a cable to the microphone input terminal of the computer. It also occurs that the loudspeakers and the

microphone are built-in in the computer, for example near the viewing screen. When the computer is used for conversational communication with another person, such a separate microphone and separate loudspeakers (or built-in microphone and loudspeakers of the computer) can of course be used. However, conversational communication via the regular microphone and loudspeakers of the computer does often not work very well. A user therefore often finds that it is more comfortable to talk with the help of an ordinary telephone where a telephone handset is held against the ear or where a headset is arranged on the head.

Furthermore, more and more people nowadays use the computer in an open-plan office or in a room where other people are present. It can therefore be considered disturbing that conversational communication takes place via the loudspeakers, since the sound thereby also reaches the people who are near. If, furthermore, the conversation is confidential, it is of course a significant disadvantage that it takes place via loudspeakers that several persons can hear.

SUMMARY OF THE INVENTION

An object of the present invention is to provide a unit with which the above-described problems are avoided. Another object is to provide such a unit that is considered as advantageous by a user when conversational communication takes place via the computer. A further object is to provide such a unit which can been used in addition to for example the ordinary external loudspeakers of the computer. Still an object is to provide such a unit which thereby in a simple manner is activated and deactivated at the same time as such external loudspeakers are deactivated and activated, respectively.

These objects are achieved by a unit of the kind that is described in the first paragraph above and which is characterised in that said unit comprises a switching member with at least a first and a second switching state. The unit is arranged such that, when the unit is connected as intended to said computer and the switching member is in said first switching state, the unit is connected for use for con-

versational communication via the computer such that said microphone part and said ear-headphone part are active while said desk or floor loudspeaker or built-in loudspeaker is not active. In said second switching state at least said ear-headphone part is not active while said desk or floor loudspeaker or built-in loudspeaker is active.

It should be noted that the concept "conversational communication" in this context primarily means that conversation can be carried on with some other person via for example internet, but the concept can also include the case when "the conversation" only takes place against the computer itself, for example in that commands are fed into and in that sounds which are produced by the computer are heard in the ear-headphone part.

It should also be noted that when it is said that a loudspeaker or a microphone is "active", it is meant that this loudspeaker or microphone is connected such that sound can be produced by the loudspeaker and such that sound can be transferred via the microphone. When it is said that a loudspeaker or a microphone is not active, it is thus meant that these entities cannot be actively used in order to reproduce or to enter sound.

It should also be noted that the ear-headphone part can be intended for one ear or for both ears. If for example stereo sound is to be produced, the ear-headphone part conveniently consists of two sound reproducers that are to be arranged at the ears of a user. Also the microphone part can be a mono or stereo microphone.

With the unit according to the invention, switching can thus in a simple manner take place between said first and second switching states. For example, a person that works at the computer can normally use the built-in or external loudspeakers of the computer. The switching member is thus in said second switching state. When the person in question wants to carry on for example a conversation with another person, the switching member is switched to the first switching state. A user may thus in a comfortable manner use the

unit for conversational communication. When the conversation is over, switching can in a simple manner take place to the second switching state such that the user can continue to work with the computer with the loudspeakers of the computer being active.

According to a preferred embodiment of the invention, the unit comprises a cable which on one hand is connected to or arranged to be connected to said microphone part and ear-headphone part and on the other hand is arranged to be connected at least to said computer. With the help of such a cable, a safe connection can be established between the unit and the computer.

The cable can be provided with at least a first contact member and a second contact member, wherein the first contact member is arranged to be connected to the computer and the second contact member is arranged to, for example via a further cable, be connected to said desk or floor loudspeaker. The unit can in this way in a simple manner be connected between the computer and the desk or floor loudspeaker of the computer.

According to an alternative embodiment, the unit comprises a transmitter member arranged such that the unit can communicate in a wireless manner with said computer, wherein the transmitter member is arranged such that when said switching member is in or is being switched to said first switching state, the transmitter member transmits a control signal to a corresponding receiver member connected to the computer, such that the control signal ensures that when the switching member is in the first switching state, the computer is arranged such that the unit is connected for use for conversational communication via the computer while said desk or floor loudspeaker or built-in loudspeaker is not active. According to this embodiment, no cable is thus necessarily between the unit and the computer. Instead, signals are transmitted in a wireless manner.

According to still an embodiment, the unit is arranged such that when the unit is connected as intended with said computer and the switching member is in said first switching state, said microphone

part is active while a possible built-in microphone of the computer or a separate microphone, with which the computer is connected, is not active, wherein when the switching member is in said second switching state, said microphone part is not active while the possible built-in microphone of the computer or said separate microphone, with which the computer is connected, is active. This embodiment is thus particularly advantageous if the computer also has another microphone connected to or built-in in the computer. The microphone part in the unit according to the invention thus takes over the microphone function when the switching member is in the first switching state.

The cable can also be provided also with a third contact member and a fourth contact member, wherein the third contact member is arranged to be connected to the computer and the fourth contact member is arranged to, for example via a further cable, be connected to said separate microphone. The unit can hereby in a simple manner be connected also between the computer and the separate microphone.

According to still an embodiment, the first contact member is a male contact of standard type which is configured to be plugged into a corresponding female contact which constitutes the loudspeaker input terminal of the computer, wherein said second contact member is a female contact of standard type which is configured to receive a corresponding male contact on a cable from said desk or floor loudspeaker, wherein said third contact member is a male contact of standard type which is configured to be plugged into a corresponding female contact which constitutes the microphone input terminal of the computer and wherein said fourth contact member is a female contact of standard type which is configured to receive a corresponding male contact on a cable from said separate microphone. Since the contacts are of standard type, no modification needs to be done of the computer or of the external loudspeakers or microphone of the computer. Instead, the whole cable from the unit can simply be connected between the computer and such external loudspeakers or external microphone.

The switching member can be arranged to be manually switched by the user between said first and second switching states. The switching member can also be arranged to be automatically switched between said first and second switching states. A manually switching can for example take place via a manual switch arranged on the unit. By making the switching member automatical, the user does not need to manually switch the switching member. Instead switching takes place automatically for example when the user lifts the unit in order to hold it against or attach it to the head.

The purpose of he invention is also achieved by a computer system comprising a unit according to any of the preceding embodiments and said computer with at least one loudspeaker which can be a desk or floor loudspeaker or which can be a built-in in the computer. Both the computer, the loudspeaker of the computer and the unit thus form part of the system. Possibly also a separate computer microphone can form part of the computer system. With such a system, the above-described advantages are achieved.

SHORT DESCRIPTION OF THE DRAWINGS

The present invention will now be explained with the help of embodiment alternatives given as examples and with reference to the attached drawings.

Fig 1 shows schematically a computer with peripheral equipment.

Fig 2 shows schematically an embodiment of the unit according to the invention.

Fig 3 shows schematically an alternative embodiment of the unit according to the invention.

Fig 4 shows schematically a circuit diagram where the switching member which forms part of the unit according to the invention is in a first switching state.

Fig 5 shows schematically a circuit diagram where the switching member which forms part of the unit according to the invention is in a second switching state.

DESCRIPTION OF EMBODIMENTS OF THE INVENTION

Fig 1 shows schematically a computer 16 with peripheral equipment. The computer 16 comprises according to this embodiment the actual computer part 17 and a viewing screen 19. The computer 16 can also be connected to a transmitter/receiver unit 28 which enables a wireless communication with the peripheral equipment. However, usually the communication with the peripheral equipment takes place via cables. Within the circle in Fig 1 an example of input terminals to the computer 16 is schematically shown. These input terminals are often positioned on the back of the computer unit 17. The input terminals are usually of a standard format. An input terminal 41 can for example be a female contact which constitutes the loudspeaker input terminal of the computer 16. Another input terminal 43 can for example be a female contact which constitutes the microphone input terminal of the computer 16. The computer 16 is usually connected to different peripheral equipment. Fig 1 shows schematically a loudspeaker 18 which for example can be a desk or floor loudspeaker. From the loudspeaker 18 a cable 24 extends. At the end of the cable 24 there is a male contact 42 of standard format which is configured to be plugged into a corresponding female contact 41 of the computer 16. Fig 1 also schematically shows a separate microphone 36 which can be connected to the computer 16. From the microphone 36 a cable 38 extends. At the end of the cable 38 a male contact 44 is arranged. This male contact is suitably of a standard format and configured to be plugged into a corresponding female contact 43 of the computer 16.

It should be noted that it is also conceivable that the computer 16 instead has built-in loudspeakers and/or a built-in microphone.

Fig 2 schematically shows an embodiment of a microphone/ear-headphone unit 10 according to the invention. The unit 10 has a microphone part 12 and an ear-headphone part 14. These parts are arranged on the unit 10 such that when the unit 10 is used as intended, the ear-headphone part 14 is arranged at or is held against the ear of a user while the microphone part 12 is arranged near the user's mouth. The unit 10 can thus be designed in a similar manner to a normal telephone handset. Alternatively, the unit 10 can also be designed as a headset (not shown in the figures) which can be attached to the head. The unit 10 can be connected to a computer 16 in order to enable conversational communication via the computer 16. The unit 10 has a switching member 20 which has at least a first and a second switching state. When the unit 10 is connected to the computer 16, the unit 10 is connected for use for conversational communication via the computer when the switching member 20 is in the first switching state. In the first switching state, the microphone part 12 and the ear-headphone part 14 are active while a desk or floor loudspeaker 18 or a built-in loudspeaker in the computer 16 is not active. However, in the second switching state, the desk or floor loudspeaker 18 or a built-in loudspeaker in the computer 16 is active while the ear-headphone part 14 is not active. The switching states will be described more closely in connection with Fig 4 and Fig 5.

The unit 10 has a cable 22 which contains wires which are connected to the microphone part 12 and the ear-headphone part 14. At the other end of the cable 22 there is a first contact member 31, a second contact member 32, a third contact member 33 and a fourth contact member 34. The first contact member 31 is a male contact of standard type and is configured to be plugged into the female contact 41 which constitutes the loudspeaker input terminal of the computer 16. The second contact member 32 is a female contact of standard type which is configured to receive a male contact 42 on the cable 24 from the loudspeaker 18. The third contact member 33 is a male contact of standard type which is configured to be plugged into the female contact 43 which constitutes the microphone input terminal of the computer 16. The fourth contact

member 34 is a female contact of standard type which is configured to receive the male contact 44 on the cable 38 from the separate microphone 36. In this manner, the unit 10 can be connected to the computer 16 and to the loudspeaker 18 and the microphone 36.

Fig 3 shows schematically an alternative embodiment of the unit 10. In this case the unit 10 has a transmitter member 26. The transmitter member 26 can suitably also comprise a receiver member. The transmitter member 26 is arranged such that the unit 10 can communicate in a wireless manner with the computer 16. This can take place through radio communication, for example according to the bluetooth standard. The switching member 20 is thus in this case arranged to influence the transmitter member 26 such that the transmitter member 26 transmits a control signal to a receiver member 28 which is connected to the computer 16 or which is arranged in the computer 16. The control signal thus gives the computer 16 information whether the switching member 20 is in the first or in the second switching state. In the same manner as has been described above, the computer 16 is arranged such that the unit 10 is connected for use for conversational communication via the computer when the switching member 20 is in the first switching state. In the first switching state, the loudspeaker 18 is not active.

If a separate microphone 36 is connected to the computer 16, the corresponding is the case concerning this microphone 36 when the switching member 20 is in the first and the second switching state, respectively. In the first switching state, the microphone part 12 is thus active while the separate microphone 36 is not active. In the second switching state, the microphone part 12 is not active while the microphone 36 is active.

The switching member 20 can be arranged to be manually switched by the user. The switching member 20 can for example consist of a button arranged on the telephone handset such as is shown in Fig 2 and 3. Alternatively, it is possible that the switching member 20 is arranged to automatically be switched between the first and the second switching states. For example, the unit 10 can comprise a

sensor which senses whether the unit 10 lies on a table. Such a sensor can for example consist of an optical sensor. As long as the unit 10 lies on the table, or is positioned in another intended place, the switching member 20 is in the second switching state. When the unit 10 is lifted from the table, the switching member 20 changes to the first switching state. Alternatively, such a sensor may sense when the unit 10 is held against or is attached to the head of the user.

Fig 4 shows schematically a circuit diagram when the unit 10 is in the first switching state. Different parts which have been described above are schematically marked in Fig 4 and the same reference numbers are used. From the loudspeaker 18 the cable 24 thus extends. In Fig 4 is shown that the cable contains two leads. The cable 24 ends with the contact 42 which is connected to the second contact member 32 of the unit 10. The leads from the loudspeaker 18 are via the cable 22 connected to the switching member 20. The switching member 20 is connected to the ear-headphone part 14. The unit 10 is also via the first contact member 31 connected to the loudspeaker input terminal 41 of the computer 16. In a corresponding manner, the cable 38 extends from the microphone 36. The cable 38 ends with the contact 44 which is connected to the fourth contact member 34. The leads lead to the switching member 20 which is connected to the microphone part 12. The cable 22 is also connected to the microphone input terminal 43 of the computer 16 via the third contact member 33. For the sake of clarity, in Fig 4 the leads for the microphone part 12 have been separated from the leads for the ear-headphone part 14. The switching member 20 is shown schematically. As can be seen in Fig 4, the switching member 20 is set such that the microphone part 12 and the ear-headphone part 14 are connected to the computer 16 while the loudspeaker 18 and the microphone 36 are not connected to the computer 16.

Fig 5 shows schematically the same circuit diagram as Fig 4 but when the switching member 20 is in the second switching state. As can be seen from the lead arrangement in Fig 5, the loudspeaker 18

and the microphone 36 are connected to the computer 16 while the microphone part 12 and the ear-headphone part 14 are not connected to the computer 16.

It should be noted that the circuit diagram is only a schematic example of how the switching member 20 can be designed. Alternative lead arrangements are however obvious to a person skilled in the art. Furthermore, as has been mentioned above, the loudspeaker 18 and/or the microphone 36 can also be arranged for stereo sound. In this case, there are further leads in the respective cables.

In case the unit 10 is connected in a wireless manner to the computer 16, suitable control signals are sent which control the connection and disconnection of loudspeaker 18, microphone 36, microphone part 12 and ear-headphone part 14 in a corresponding manner as in the example according to Fig 4 and 5.

The invention also concerns a computer system. This computer system comprises the unit 10 together with the computer 16 and at least one loudspeaker 18. This loudspeaker 18 can be a desk or floor loudspeaker 18 or a loudspeaker which is built-in in the computer 16. Also a microphone 36 may form part of the computer system.

The invention is not limited to the described embodiments but can be varied and modified within the scope of the annexed claims.